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DICTIONARY FILE UPDATES: 4 DEC 2007 HIGHEST RN 956696-50-7

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=> d his

(FILE 'HOME' ENTERED AT 15:40:23 ON 05 DEC 2007)

FILE 'HCAPLUS' ENTERED AT 15:40:33 ON 05 DEC 2007

E US20060127772/PN

L1 1 S E3  
SEL RN

FILE 'REGISTRY' ENTERED AT 15:41:05 ON 05 DEC 2007

L2 13 S E1-13  
L3 954 S (LI(L)P(L)S(L)O)/ELS  
L4 31 S L3 AND 4/ELC.SUB  
L5 9 S L2 AND L4  
L6 14 S L4 AND 0.2-0.5/LI  
L7 14 S L4 AND 0.2-0.45/LI  
L8 16 S L4 AND 0.1-0.2/P  
L9 16 S L4 AND 0.35-0.6/S  
L10 15 S L4 AND 0.03-0.13/O  
L11 13 S L7 AND L8  
L12 12 S L11 AND L9  
L13 11 S L12 AND L10  
L14 8 S L2 AND L13  
L15 1 S L5 NOT L14

FILE 'HCAPLUS' ENTERED AT 15:49:59 ON 05 DEC 2007

L16 4 S L13  
L17 11 S L4  
L18 7 S L17 NOT L16

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 15:52:48 ON 05 DEC 2007

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FILE COVERS 1907 - 5 Dec 2007 VOL 147 ISS 24  
 FILE LAST UPDATED: 4 Dec 2007 (20071204/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l16 ibib abs hitstr hitind 1-4

L16 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:1309160 HCAPLUS Full-text  
 TITLE: Method of producing solid electrolyte  
 INVENTOR(S): Ota, Nobuhiro  
 PATENT ASSIGNEE(S): Sumitomo Electric Industries, Ltd., USA  
 SOURCE: U.S. Pat. Appl. Publ., 10pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2007264579	A1	20071115	US 2007-798084	200705 10
JP 2007305552	A	20071122	JP 2006-135858	200605 15
CA 2587583	A1	20071115	CA 2007-2587583	200705 04
CN 101075500	A	20071121	CN 2007-10103948	200705 15
PRIORITY APPLN. INFO.:			JP 2006-135858	A 200605 15

AB A solid electrolyte and a method of manufacturing the same are provided. The solid electrolyte contains x atomic% of lithium, y atomic% of phosphorus, z atomic% of sulfur, and w atomic% of oxygen, in which the x, the y, the z, and the w satisfy the following expressions: (1)  $20 \leq x \leq 45$ , (2)  $10 \leq y \leq 20$ , (3)

35≤z≤60, (4) 1≤w≤10, and (5)  
 x+y+z+w=100. Apexes of X-ray diffraction peaks in an X-ray diffraction  
 pattern obtained by an X-ray diffraction method using a K $\alpha$ -ray of Cu exist at  
 diffraction angles 2 $\theta$  of 16.7°±0.25°, 20.4°±0.25°,  
 23.8°±0.25°, 25.9°, 0.25°,  
 29.4°±0.25°, 30.4°±0.25°,  
 31.7°±0.25°, 33.5°±0.25°,  
 41.5°±0.25°, 43.7°±0.25°, and  
 51.2°±0.25°, resp., in the X-ray diffraction pattern, and a half-width of each  
 of the X-ray diffraction peaks is not larger than 0.5°.

IT 956593-64-9P

RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (method of producing solid electrolyte)

RN 956593-64-9 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
O	0.09	17778-80-2
P	0.15	7723-14-0
S	0.45	7704-34-9
Li	0.31	7439-93-2

INCL -429

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49

IT 340142-26-9P, Lithium phosphorus sulfur oxide 956593-64-9P

RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (method of producing solid electrolyte)

L16 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:1357284 HCAPLUS Full-text

DOCUMENT NUMBER: 146:84751

TITLE: Method of fabrication of lithium secondary  
 battery anode member

INVENTOR(S): Ota, Nobuhiro

PATENT ASSIGNEE(S): Sumitomo Electric Industries, Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 6pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2006292449	A1	20061228	US 2006-476126	200606 28
JP 2007012324	A	20070118	JP 2005-188945	200506 28
CA 2548832	A1	20061228	CA 2006-2548832	200605 29

KR 2007000983 A 20070103 KR 2006-52409 200606  
12  
EP 1739769 A1 20070103 EP 2006-253315 200606  
26  
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK,  
TR, AL, BA, HR, MK, YU  
CN 1893150 A 20070110 CN 2006-10100008 200606  
28  
PRIORITY APPLN. INFO.: JP 2005-188945 A 200506  
28

AB A lithium secondary battery anode member of the present invention includes a solid electrolyte film formed on a lithium metal film and is capable of suppressing reduction of the solid electrolyte film over a long period of time. In the lithium secondary battery anode member, the lithium metal film and the solid electrolyte film are laminated on a substrate, the solid electrolyte film contains the composition  $x\text{Li}\cdot y\text{P}\cdot z\text{S}\cdot w\text{O}$  wherein  $x$ ,  $y$ ,  $z$ , and  $w$  satisfy the relations,  $0.2 \leq x \leq 0.45$ ,  $0.1 \leq y \leq 0.2$ ,  $0.35 \leq z \leq 0.6$ , and  $0.03 \leq w \leq 0.13$ , resp., ( $x+y+z+w=1$ ), and the main peaks of an X-ray diffraction pattern of the solid electrolyte film measured by a film method using Cu K $\alpha$  radiation are at  $2\theta$  of about  $11^\circ$  and  $30^\circ$  and each have a half width of  $10^\circ$  or less.

IT 733049-25-7P, Lithium phosphorus sulfur oxide  
(Li0.26P0.13S0.54O0.07) 917364-96-6P, Lithium phosphorus  
sulfur oxide (Li0.26P0.13S0.57O0.04)  
RL: SPN (Synthetic preparation); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(method of fabrication of lithium secondary battery anode member)  
RN 733049-25-7 HCAPLUS  
CN Lithium phosphorus sulfur oxide (Li0.26P0.13S0.54O0.07) (CA INDEX  
NAME)

Component	Ratio	Component Registry Number
O	0.07	17778-80-2
P	0.13	7723-14-0
S	0.54	7704-34-9
Li	0.26	7439-93-2

RN 917364-96-6 HCAPLUS  
CN Lithium oxide phosphide sulfide (Li0.26O0.04P0.13S0.57) (CA INDEX  
NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
P	0.13	7723-14-0
S	0.57	7704-34-9
Li	0.26	7439-93-2

INCL 429322000; 029623500

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 340142-26-9P, Lithium phosphorus sulfur oxide 733049-25-7P  
 , Lithium phosphorus sulfur oxide (Li<sub>0.26</sub>P<sub>0.13</sub>S<sub>0.54</sub>O<sub>0.07</sub>)  
 917364-96-6P, Lithium phosphorus sulfur oxide  
 (Li<sub>0.26</sub>P<sub>0.13</sub>S<sub>0.57</sub>O<sub>0.04</sub>)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (method of fabrication of lithium secondary battery anode member)

L16 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:1154867 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:424673  
 TITLE: Anode member for secondary lithium battery and  
 its manufacture  
 INVENTOR(S): Ota, Nobuhiro; Okuda, Nobuyuki; Ueki, Hiroyuki  
 PATENT ASSIGNEE(S): Sumitomo Electric Industries Ltd., Japan  
 SOURCE: PCT Int. Appl., 20 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005101549	A1	20051027	WO 2004-JP4800	20040401
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2483599	A1	20051001	CA 2004-2483599	20040401
CN 1739211	A	20060222	CN 2004-80000340	20040401
EP 1732152	A1	20061213	EP 2004-725202	20040401
US 2006127772	A1	20060615	US 2005-542311	20050715
PRIORITY APPLN. INFO.:			WO 2004-JP4800	W 20040401

AB The anode member has a Li metal film and an inorg. solid electrolyte film laminated on a substrate; where the solid electrolyte film contains Li, P, S, and O and is represented by Li<sub>a</sub>bP<sub>b</sub>cS<sub>c</sub>dO (a = 0.20-0.45; b = 0.10-0.20; c = 0.35-0.60; d = 0.03-0.13 and a+b+c+d = 1). The anode member is manufactured

by forming the Li metal film and the solid electrolyte film by a vapor phase method selected from deposition, ion plating, sputtering or laser applying method.

IT 733049-21-3, Lithium oxide phosphide sulfide  
(Li0.2600.04P0.15S0.55) 733049-23-5, Lithium phosphorus  
oxide sulfide (Li0.41P0.11O0.13S0.35) 733049-24-6, Lithium  
oxide phosphide sulfide (Li0.2600.09P0.13S0.52) 733049-25-7  
, Lithium oxide phosphide sulfide (Li0.2600.07P0.13S0.54)  
733049-27-9, Lithium phosphorus oxide sulfide  
(Li0.45P0.10O0.03S0.42) 733049-28-0, Lithium oxide  
phosphide sulfide (Li0.2300.03P0.14S0.6) 868384-25-2,  
Lithium oxide phosphide sulfide (Li0.2-0.45O0.03-0.13P0.1-0.2S0.35-  
0.6) 868384-27-4, Lithium phosphorus oxide sulfide  
(Li0.2P0.20O0.03S0.57)  
RL: DEV (Device component use); USES (Uses)  
(anode members containing lithium, phosphorus, sulfur and oxygen for  
secondary lithium batteries)  
RN 733049-21-3 HCAPLUS  
CN Lithium oxide phosphide sulfide (Li0.2600.04P0.15S0.55) (9CI) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.04	17778-80-2
P	0.15	7723-14-0
S	0.55	7704-34-9
Li	0.26	7439-93-2

RN 733049-23-5 HCAPLUS  
CN Lithium phosphorus oxide sulfide (Li0.41P0.11O0.13S0.35) (CA INDEX  
NAME)

Component	Ratio	Component
		Registry Number
O	0.13	17778-80-2
P	0.11	7723-14-0
S	0.35	7704-34-9
Li	0.41	7439-93-2

RN 733049-24-6 HCAPLUS  
CN Lithium oxide phosphide sulfide (Li0.2600.09P0.13S0.52) (9CI) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.09	17778-80-2
P	0.13	7723-14-0
S	0.52	7704-34-9
Li	0.26	7439-93-2

RN 733049-25-7 HCAPLUS  
CN Lithium phosphorus sulfur oxide (Li0.26P0.13S0.54O0.07) (CA INDEX  
NAME)

Component	Ratio	Component
		Registry Number

O		0.07		17778-80-2
P		0.13		7723-14-0
S		0.54		7704-34-9
Li		0.26		7439-93-2

RN 733049-27-9 HCAPLUS

CN Lithium phosphorus oxide sulfide (Li0.45P0.100.03S0.42) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03		17778-80-2
P		0.1		7723-14-0
S		0.42		7704-34-9
Li		0.45		7439-93-2

RN 733049-28-0 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.23O0.03P0.14S0.6) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03		17778-80-2
P		0.14		7723-14-0
S		0.6		7704-34-9
Li		0.23		7439-93-2

RN 868384-25-2 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.2-0.45O0.03-0.13P0.1-0.2S0.35-0.6) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03 - 0.13		17778-80-2
P		0.1 - 0.2		7723-14-0
S		0.35 - 0.6		7704-34-9
Li		0.2 - 0.45		7439-93-2

RN 868384-27-4 HCAPLUS

CN Lithium phosphorus oxide sulfide (Li0.2P0.2O0.03S0.57) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03		17778-80-2
P		0.2		7723-14-0
S		0.57		7704-34-9
Li		0.2		7439-93-2

IC ICM H01M004-48

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 7440-57-5,

Gold, uses 52627-24-4, Cobalt lithium oxide 733049-21-3,

Lithium oxide phosphide sulfide (Li0.26O0.04P0.15S0.55)

733049-23-5, Lithium phosphorus oxide sulfide

(Li<sub>0.41</sub>P<sub>0.11</sub>O<sub>0.13</sub>S<sub>0.35</sub>) 733049-24-6, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.09</sub>P<sub>0.13</sub>S<sub>0.52</sub>) 733049-25-7, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.07</sub>P<sub>0.13</sub>S<sub>0.54</sub>) 733049-27-9, Lithium phosphorus oxide sulfide (Li<sub>0.45</sub>P<sub>0.10</sub>O<sub>0.03</sub>S<sub>0.42</sub>) 733049-28-0, Lithium oxide phosphide sulfide (Li<sub>0.23</sub>O<sub>0.03</sub>P<sub>0.14</sub>S<sub>0.6</sub>) 868384-25-2, Lithium oxide phosphide sulfide (Li<sub>0.2</sub>-0.45O<sub>0.03</sub>-0.13P<sub>0.1</sub>-0.2S<sub>0.35</sub>-0.6) 868384-26-3, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.04</sub>P<sub>0.15</sub>S<sub>0.66</sub>) 868384-27-4, Lithium phosphorus oxide sulfide (Li<sub>0.2</sub>P<sub>0.20</sub>O<sub>0.03</sub>S<sub>0.57</sub>)

RL: DEV (Device component use); USES (Uses)

(anode members containing lithium, phosphorus, sulfur and oxygen for secondary lithium batteries)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:632504 HCAPLUS Full-text

DOCUMENT NUMBER: 141:176838

TITLE: Secondary lithium battery anode component and its manufacture

INVENTOR(S): Ota, Yukihiro; Okuda, Nobuyuki; Ueki, Hiroyuki; Ihara, Hirohiko

PATENT ASSIGNEE(S): Sumitomo Electric Industries, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004220906	A	20040805	JP 2003-6566	20030115
JP 3716833	B2	20051116	JP 2003-6566	20030115
PRIORITY APPLN. INFO.:				

AB The title component comprises a Li film and an inorg. solid electrolyte membrane laminated on a substrate; where the electrolyte membrane has a composition represented by Li<sub>a</sub>PbScO<sub>d</sub> (a = 0.2-0.45; b = 0.1-0.2; c = 0.35-0.6; and d = 0.03-0.13). The component is manufactured by forming the Li film and the inorg. solid electrolyte membrane by a gas phase method; where the gas phase method is a deposition method, an ion plating method, a sputtering method, or a laser application method.

IT 733049-21-3, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.04</sub>P<sub>0.15</sub>S<sub>0.55</sub>) 733049-22-4, Lithium oxide phosphide sulfide (Li<sub>0.29</sub>O<sub>0.05</sub>P<sub>0.13</sub>S<sub>0.53</sub>) 733049-23-5, Lithium phosphorus oxide sulfide (Li<sub>0.41</sub>P<sub>0.11</sub>O<sub>0.13</sub>S<sub>0.35</sub>) 733049-24-6, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.09</sub>P<sub>0.13</sub>S<sub>0.52</sub>) 733049-25-7, Lithium oxide phosphide sulfide (Li<sub>0.26</sub>O<sub>0.07</sub>P<sub>0.13</sub>S<sub>0.54</sub>) 733049-27-9, Lithium phosphorus oxide sulfide (Li<sub>0.45</sub>P<sub>0.10</sub>O<sub>0.03</sub>S<sub>0.42</sub>) 733049-28-0, Lithium oxide phosphide sulfide (Li<sub>0.23</sub>O<sub>0.03</sub>P<sub>0.14</sub>S<sub>0.6</sub>)



RL: DEV (Device component use); USES (Uses)

(manufacture and components of anodes. containing lithium phosphorus oxide sulfide in electrolyte membranes for secondary lithium batteries)

RN 733049-21-3 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.26O0.04P0.15S0.55) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
P	0.15	7723-14-0
S	0.55	7704-34-9
Li	0.26	7439-93-2

RN 733049-22-4 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.29O0.05P0.13S0.53) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.05	17778-80-2
P	0.13	7723-14-0
S	0.53	7704-34-9
Li	0.29	7439-93-2

RN 733049-23-5 HCAPLUS

CN Lithium phosphorus oxide sulfide (Li0.41P0.11O0.13S0.35) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.13	17778-80-2
P	0.11	7723-14-0
S	0.35	7704-34-9
Li	0.41	7439-93-2

RN 733049-24-6 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.26O0.09P0.13S0.52) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.09	17778-80-2
P	0.13	7723-14-0
S	0.52	7704-34-9
Li	0.26	7439-93-2

RN 733049-25-7 HCAPLUS

CN Lithium phosphorus sulfur oxide (Li0.26P0.13S0.54O0.07) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.07	17778-80-2
P	0.13	7723-14-0

S		0.54		7704-34-9
Li		0.26		7439-93-2

RN 733049-27-9 HCAPLUS

CN Lithium phosphorus oxide sulfide (Li0.45P0.100.03S0.42) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03		17778-80-2
P		0.1		7723-14-0
S		0.42		7704-34-9
Li		0.45		7439-93-2

RN 733049-28-0 HCAPLUS

CN Lithium oxide phosphide sulfide (Li0.2300.03P0.14S0.6) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		0.03		17778-80-2
P		0.14		7723-14-0
S		0.6		7704-34-9
Li		0.23		7439-93-2

IC ICM H01M004-02

ICS C01D015-00; H01M004-04; H01M004-40; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 733049-21-3, Lithium oxide phosphide sulfide (Li0.2600.04P0.15S0.55) 733049-22-4, Lithium oxide phosphide sulfide (Li0.2900.05P0.13S0.53) 733049-23-5, Lithium phosphorus oxide sulfide (Li0.41P0.1100.13S0.35) 733049-24-6, Lithium oxide phosphide sulfide (Li0.2600.09P0.13S0.52) 733049-25-7, Lithium oxide phosphide sulfide (Li0.2600.07P0.13S0.54) 733049-26-8, Lithium oxide phosphide sulfide (Li0.200.03P0.02S0.57) 733049-27-9, Lithium phosphorus oxide sulfide (Li0.45P0.100.03S0.42) 733049-28-0, Lithium oxide phosphide sulfide (Li0.2300.03P0.14S0.6)

RL: DEV (Device component use); USES (Uses)  
(manufacture and components of anodes. containing lithium phosphorus oxide sulfide in electrolyte membranes for secondary lithium batteries)

=&gt; d 118 ibib abs hitstr hitind 1-7

L18 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:559792 HCAPLUS Full-text

DOCUMENT NUMBER: 139:119910

TITLE: Manufacture of electrically conductive lithium thiophosphate and lithium phosphate thiophosphate both suitable for solid electrolytes

INVENTOR(S): Takada, Kazunori; Kondo, Shigeo; Sasaki, Takayoshi; Watanabe, Jun; Inada, Taro; Kajiyama, Akihisa; Sasaki, Hideki

PATENT ASSIGNEE(S): National Institute for Research In Inorganic

Materials, Japan; Toda Kogyo Corp.; Japan  
Storage Battery Co., Ltd.; Denki Kagaku Kogyo  
Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003206111	A	20030722	JP 2002-237	20020107

PRIORITY APPLN. INFO.: JP 2002-237  
20020107

AB Li<sub>3</sub>PS<sub>4</sub> with elec. conductivity  $\geq (7 + 10^{-6})$  S/cm (at 25°) is manufactured by (1) heating raw material mixts. containing Li, P, and S at  $\geq 500^\circ$  in the absence of oxygen, and (2) quenching. Li<sub>3</sub>PS<sub>4</sub> with elec. conductivity  $< (7 + 10^{-6})$  S/cm (at 25°) is heated at  $\geq 500^\circ$  in an inert atmospheric and then quenched to give Li<sub>3</sub>PS<sub>4</sub>-4xO<sub>4</sub>x (0.0 < x < 1.0). Alternatively, Li<sub>3</sub>PS<sub>4</sub>-4xO<sub>4</sub>x (0.0 < x < 1.0) is manufactured by (1) and cooling. These compds. show lithium ion conductivity and are suitable for lithium battery electrolytes.

IT 565227-64-7P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.05(PS<sub>4</sub>)0.95) 565227-65-8P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.1(PS<sub>4</sub>)0.9) 565227-66-9P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.2(PS<sub>4</sub>)0.8) 565227-67-0P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.25(PS<sub>4</sub>)0.75) 565227-68-1P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.3(PS<sub>4</sub>)0.7) 565227-69-2P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.4(PS<sub>4</sub>)0.6) 565227-70-5P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.5(PS<sub>4</sub>)0.5) 565227-71-6P, Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>[(PO<sub>4</sub>), (PS<sub>4</sub>)])  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(manufacture of elec. conductive lithium thiophosphate and lithium phosphate thiophosphate by heating raw material mixts. and quenching or cooling)

RN 565227-64-7 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.05(PS<sub>4</sub>)0.95) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
PS4	0.95		22383-48-8
O4P	0.05		14265-44-2
Li	3		7439-93-2

RN 565227-65-8 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li<sub>3</sub>(PO<sub>4</sub>)0.1(PS<sub>4</sub>)0.9) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
PS4	0.9	22383-48-8
O4P	0.1	14265-44-2
Li	3	7439-93-2

RN 565227-66-9 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3(PO4)0.2(PS4)0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0.8	22383-48-8
O4P	0.2	14265-44-2
Li	3	7439-93-2

RN 565227-67-0 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3(PO4)0.25(PS4)0.75) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0.75	22383-48-8
O4P	0.25	14265-44-2
Li	3	7439-93-2

RN 565227-68-1 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3(PO4)0.3(PS4)0.7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0.7	22383-48-8
O4P	0.3	14265-44-2
Li	3	7439-93-2

RN 565227-69-2 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3(PO4)0.4(PS4)0.6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0.6	22383-48-8
O4P	0.4	14265-44-2
Li	3	7439-93-2

RN 565227-70-5 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3(PO4)0.5(PS4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0.5	22383-48-8
O4P	0.5	14265-44-2
Li	3	7439-93-2

RN 565227-71-6 HCAPLUS

CN Lithium phosphate phosphorotetrathioate (Li3[(PO4),(PS4)]) (CA  
INDEX NAME)

Component	Ratio	Component Registry Number
PS4	0 - 1	22383-48-8
O4P	0 - 1	14265-44-2
Li	3	7439-93-2

IC ICM C01B025-30

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76

IT 82857-67-8P 565227-64-7P, Lithium phosphate  
phosphorotetrathioate (Li3(PO4)0.05(PS4)0.95) 565227-65-8P  
, Lithium phosphate phosphorotetrathioate (Li3(PO4)0.1(PS4)0.9)  
565227-66-9P, Lithium phosphate phosphorotetrathioate  
(Li3(PO4)0.2(PS4)0.8) 565227-67-0P, Lithium phosphate  
phosphorotetrathioate (Li3(PO4)0.25(PS4)0.75) 565227-68-1P  
, Lithium phosphate phosphorotetrathioate (Li3(PO4)0.3(PS4)0.7)  
565227-69-2P, Lithium phosphate phosphorotetrathioate  
(Li3(PO4)0.4(PS4)0.6) 565227-70-5P, Lithium phosphate  
phosphorotetrathioate (Li3(PO4)0.5(PS4)0.5) 565227-71-6P,  
Lithium phosphate phosphorotetrathioate (Li3[(PO4),(PS4)])  
RL: IMF (Industrial manufacture); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(manufacture of elec. conductive lithium thiophosphate and lithium  
phosphate thiophosphate by heating raw material mixts. and  
quenching or cooling)

L18 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:486334 HCAPLUS Full-text

DOCUMENT NUMBER: 137:49676

TITLE: Method of forming thin film of inorganic solid  
electrolyte for use in lithium battery

INVENTOR(S): Kugai, Hirokazu; Ota, Nobuhiro

PATENT ASSIGNEE(S): Sumitomo Electric Industries, Ltd., Japan

SOURCE: Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1217682	A2	20020626	EP 2001-310437	200112 13
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2002184455	A	20020628	JP 2000-378474	200012 13
JP 3407733	B2	20030519		
US 2002106456	A1	20020808	US 2001-16357	

200110  
30

US 6641863 B2 20031104  
CA 2360719 A1 20020613 CA 2001-2360719

200110  
31

TW 529194 B 20030421 TW 2001-90130195

200112  
06

CN 1359165 A 20020717 CN 2001-143587

200112  
13

PRIORITY APPLN. INFO.: JP 2000-378474 A

200012  
13

AB A method of producing a thin film of an inorg. solid electrolyte having a relatively high ionic conductance is provided. In the method, a thin film made of an inorg. solid electrolyte is formed, by a vapor deposition method, on a base member being heated. The thin film obtained through the heat treatment exhibits an ionic conductance higher than that of the thin film formed on the base member not being heated. The ionic conductance can also be increased through the steps of forming the thin film made of the inorg. solid electrolyte on the base member at room temperature or a temperature lower than 40° and then heating the thin film of the inorg. solid electrolyte.

IT 438491-29-3

RL: DEV (Device component use); USES (Uses)  
(method of forming thin film of inorg. solid electrolyte for use in lithium battery)

RN 438491-29-3 HCAPLUS

CN Lithium phosphate phosphenotrithioate sulfide  
(Li1.29(PO4)0.05(PS3)0.76S0.19) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.76	94287-53-3
O4P	0.05	14265-44-2
S	0.19	7704-34-9
Li	1.29	7439-93-2

IC ICM H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 57

IT 161286-52-8, Lithium sulfide thiosilicate (Li1.2S0.2(SiS3)0.4)  
364387-50-8, Lithium silicate sulfide thiosilicate  
(Li1.34(SiO4)0.05S0.19(SiS3)0.38) 389116-89-6, Lithium sulfide  
thiosilicate (Li1.22S0.2(SiS3)0.4) 389116-91-0, Lithium borate  
sulfide thiosilicate (Li1.29(BO3)0.05S0.19(SiS3)0.38) 389116-93-2  
389116-95-4, Germanium lithium sulfide (Ge0.4Li1.22S1.39)  
389116-97-6, Gallium lithium sulfide (Ga0.79Li1.22S1.78)  
389116-99-8, Lithium phosphenotrithioate sulfide  
(Li1.22(PS3)0.79S0.2) 389117-01-5, Lithium sulfide thiosilicate  
(Li1.12S0.1(SiS3)0.44) 438491-25-9, Lithium phosphate sulfide  
thiosilicate (Li1.19(PO4)0.05S0.19(SiS3)0.38) 438491-26-0  
438491-27-1D, Lithium phosphate sulfide thiosilicate  
(Li1.29(PO4)0.04S0.19(SiS3)0.38), nitrated derivs. 438491-28-2,  
Lithium sulfide thiosilicate (Li1.32S0.3(SiS3)0.34)  
438491-29-3

RL: DEV (Device component use); USES (Uses)

(method of forming thin film of inorg. solid electrolyte for use  
in lithium battery)

L18 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:379735 HCAPLUS Full-text  
 DOCUMENT NUMBER: 134:369435  
 TITLE: Secondary lithium batteries having inorganic  
 solid electrolyte layers  
 INVENTOR(S): Ota, Yukihiro; Yamanaka, Shosaku  
 PATENT ASSIGNEE(S): Sumitomo Electric Industries, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001143690	A	20010525	JP 1999-321909	199911 12
PRIORITY APPLN. INFO.:			JP 1999-321909	199911 12

AB The batteries have porous polymer foil separators, cathodes, and anodes using C as active mass, wherein the title layers are formed on (1) the anode surfaces or the anode-side surfaces of the separators or (2) the active mass C particle surfaces. The layers prevent Li metal dendrite generation on the anodes for short circuit prevention, and the batteries have high safety and charge-discharge cycle performance.

IT 340142-26-9P, Lithium phosphorus sulfur oxide  
 340142-27-0P

RL: DEV (Device component use); PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (amorphous electrolyte layer; Li batteries having inorg. solid  
 electrolyte layers for Li dendrite prevention on anodes)

RN 340142-26-9 HCAPLUS

CN Lithium phosphorus sulfur oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
P	x	7723-14-0
S	x	7704-34-9
Li	x	7439-93-2

RN 340142-27-0 HCAPLUS

CN Lithium oxide phosphenotrithioate sulfide  
 (Li0.3400.01(PS3)0.14S0.09) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
PS3	0.14	94287-53-3
O	0.01	17778-80-2
S	0.09	7704-34-9

Li | 0.34 | 7439-93-2

IC ICM H01M004-02  
ICS H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
IT 340142-26-9P, Lithium phosphorus sulfur oxide  
340142-27-0P  
RL: DEV (Device component use); PNU (Preparation, unclassified);  
PREP (Preparation); USES (Uses)  
(amorphous electrolyte layer; Li batteries having inorg. solid  
electrolyte layers for Li dendrite prevention on anodes)

L18 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 1994:168855 HCAPLUS Full-text  
DOCUMENT NUMBER: 120:168855  
TITLE: Amorphous lithium ion-conducting solid  
electrolytes and their syntheses  
INVENTOR(S): Kondo, Shigeo; Takada, Kazunori; Aotani, Noboru  
PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05306119	A	19931119	JP 1992-114522	199205 07
JP 3343934	B2	20021111	JP 1992-114522	199205 07

PRIORITY APPLN. INFO.:

AB The products are  $a\text{Li}_3\text{PO}_4 \cdot b\text{Li}_2\text{S} \cdot c\text{X} \cdot d\text{LiBr}$  ( $a+b+c+d = 1$ ;  $X = \text{SiS}_2, \text{GeS}_2, \text{P}_2\text{S}_5$ , and/or  $\text{B}_2\text{S}_3$ ). The products are manufactured by synthesis of amorphous compds.  $a'\text{Li}_3\text{PO}_4 \cdot b'\text{Li}_2\text{S} \cdot c'\text{X}$  ( $a'+b'+c' = 1$ ), mixing LiBr, heat melting, and rapid cooling. The electrolytes, useful for solid-state batteries, capacitors, electrochromic displays, etc., show excellent chemical stability.

IT 153600-42-1P 153600-43-2P, Lithium phosphate  
phosphenotrithioate ( $\text{Li}_{1.08}(\text{PO}_4)_0.04(\text{PS}_3)_0.96$ )  
RL: PREP (Preparation)  
(preparation of amorphous, in manufacture of solid electrolytes)

RN 153600-42-1 HCAPLUS

CN Lithium phosphate phosphenotrithioate sulfide  
( $\text{Li}_{1.39}(\text{PO}_4)_0.03(\text{PS}_3)_0.64\text{S}_{0.33}$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.64	94287-53-3
O4P	0.03	14265-44-2
S	0.33	7704-34-9
Li	1.39	7439-93-2

RN 153600-43-2 HCAPLUS

CN Lithium phosphate phosphenotrithioate ( $\text{Li}_{1.08}(\text{PO}_4)_0.04(\text{PS}_3)_0.96$ )



(CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.96	94287-53-3
O4P	0.04	14265-44-2
Li	1.08	7439-93-2

IC ICM C01D015-00  
ICS C01B017-22; C01B025-30; H01B001-06; H01M006-18; H01M010-36  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 76  
IT 153600-40-9P, Lithium sulfur phosphate thiosilicate  
(Li<sub>1.25</sub>SO<sub>0.19</sub>(PO<sub>4</sub>)<sub>0.03</sub>(SiS<sub>3</sub>)<sub>0.39</sub>) 153600-41-0P, Germanium lithium  
sulfur phosphate (Ge<sub>0.39</sub>Li<sub>1.25</sub>Si<sub>1.36</sub>(PO<sub>4</sub>)<sub>0.03</sub>) 153600-42-1P  
153600-43-2P, Lithium phosphate phosphenotrithioate  
(Li<sub>1.08</sub>(PO<sub>4</sub>)<sub>0.04</sub>(PS<sub>3</sub>)<sub>0.96</sub>)  
RL: PREP (Preparation)  
(preparation of amorphous, in manufacture of solid electrolytes)

L18 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 1994:168854 HCAPLUS Full-text  
DOCUMENT NUMBER: 120:168854  
TITLE: Amorphous lithium ion-conducting solid  
electrolytes and their manufacture  
INVENTOR(S): Kondo, Shigeo; Takada, Kazunori; Aotani, Noboru  
PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05306118	A	19931119	JP 1992-114520	199205 07
JP 3149524	B2	20010326	JP 1992-114520	199205 07

PRIORITY APPLN. INFO.:

AB The products are aLi<sub>3</sub>PO<sub>4</sub>·bLi<sub>2</sub>S·cX·dLiCl (a+b+c+d = 1; X is SiS<sub>2</sub>, GeS<sub>2</sub>, P<sub>2</sub>S<sub>5</sub>, and/or B<sub>2</sub>S<sub>3</sub>). The products are manufactured by synthesis of amorphous compds. a'Li<sub>3</sub>PO<sub>4</sub>·b'Li<sub>2</sub>S·c'X (a'+b'+c' = 1), mixing LiCl, heat melting, and rapid cooling. The electrolytes, useful for solid-state batteries, capacitors, electrochromic displays, etc., show excellent chemical stability.

IT 153600-42-1P 153600-43-2P, Lithium phosphate phosphenotrithioate (Li<sub>1.08</sub>(PO<sub>4</sub>)<sub>0.04</sub>(PS<sub>3</sub>)<sub>0.96</sub>)  
RL: PREP (Preparation)  
(preparation of amorphous, in manufacture of solid electrolytes)

RN 153600-42-1 HCAPLUS  
CN Lithium phosphate phosphenotrithioate sulfide  
(Li<sub>1.39</sub>(PO<sub>4</sub>)<sub>0.03</sub>(PS<sub>3</sub>)<sub>0.64</sub>SO<sub>0.33</sub>) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
PS3	0.64	94287-53-3
O4P	0.03	14265-44-2
S	0.33	7704-34-9
Li	1.39	7439-93-2

RN 153600-43-2 HCAPLUS

CN Lithium phosphate phosphenotrithioate (Li1.08(PO4)0.04(PS3)0.96)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.96	94287-53-3
O4P	0.04	14265-44-2
Li	1.08	7439-93-2

IC ICM C01D015-00

ICS H01B001-06; H01M006-18; H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 76

IT 153600-40-9P, Lithium sulfur phosphate thiosilicate  
(Li1.25S0.19(PO4)0.03(SiS3)0.39) 153600-41-0P, Germanium lithium  
sulfur phosphate (Ge0.39Li1.25S1.36(PO4)0.03) 153600-42-1P  
153600-43-2P, Lithium phosphate phosphenotrithioate  
(Li1.08(PO4)0.04(PS3)0.96)

RL: PREP (Preparation)

(preparation of amorphous, in manufacture of solid electrolytes)

L18 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:168853 HCAPLUS Full-text

DOCUMENT NUMBER: 120:168853

TITLE: Amorphous lithium ion-conducting solid  
electrolytes and their syntheses

INVENTOR(S): Kondo, Shigeo; Takada, Kazunori; Aotani, Noboru

PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05306117	A	19931119	JP 1992-114519	199205 07
JP 3151925	B2	20010403	JP 1992-114519	199205 07
PRIORITY APPLN. INFO.:				

AB The products are  $a\text{Li}_3\text{PO}_4 \cdot b\text{Li}_2\text{S} \cdot c\text{X} \cdot d\text{Z}$  ( $a+b+c+d = 1$ ;  $\text{X} = \text{SiS}_2, \text{GeS}_2, \text{P}_2\text{S}_5$ , and/or  $\text{B}_2\text{S}_3$ ;  $\text{Z}$  is plural halogenated Li). The products are manufactured by synthesis of amorphous compds.  $a'\text{Li}_3\text{PO}_4 \cdot b'\text{Li}_2\text{S} \cdot c'\text{X}$  ( $a'+b'+c' = 1$ ), mixing  $\text{Z}$ , heat melting, and rapid cooling. The electrolytes, useful for solid-state

batteries, capacitors, electrochromic displays, etc., show excellent chemical stability.

IT 153600-42-1P 153600-43-2P, Lithium phosphate  
phosphenotrithioate (Li1.08(PO4)0.04(PS3)0.96)  
RL: PREP (Preparation)  
(preparation of amorphous, in manufacture of solid electrolytes)  
RN 153600-42-1 HCAPLUS  
CN Lithium phosphate phosphenotrithioate sulfide  
(Li1.39(PO4)0.03(PS3)0.64S0.33) (CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.64	94287-53-3
O4P	0.03	14265-44-2
S	0.33	7704-34-9
Li	1.39	7439-93-2

RN 153600-43-2 HCAPLUS  
CN Lithium phosphate phosphenotrithioate (Li1.08(PO4)0.04(PS3)0.96)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
PS3	0.96	94287-53-3
O4P	0.04	14265-44-2
Li	1.08	7439-93-2

IC ICM C01D015-00  
ICS C01B017-22; C01B025-30; H01B001-06; H01M006-18; H01M010-36  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 76  
IT 153600-40-9P, Lithium sulfur phosphate thiosilicate  
(Li1.25S0.19(PO4)0.03(SiS3)0.39) 153600-41-0P, Germanium lithium  
sulfur phosphate (Ge0.39Li1.25S1.36(PO4)0.03) 153600-42-1P  
153600-43-2P, Lithium phosphate phosphenotrithioate  
(Li1.08(PO4)0.04(PS3)0.96)  
RL: PREP (Preparation)  
(preparation of amorphous, in manufacture of solid electrolytes)

L18 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:524557 HCAPLUS Full-text

DOCUMENT NUMBER: 113:124557

TITLE: Electrical conductivity and phase diagram of the  
system Li2SO4-Li3PO4

AUTHOR(S): Touboul, Marcel; Sephar, Nadine; Quarton, Michel

CORPORATE SOURCE: Lab. Cristallochim. Solide, Univ. Pierre et  
Marie Curie, Paris, 75252, Fr.

SOURCE: Solid State Ionics (1990), 38(3-4), 225-29

CODEN: SSIOD3; ISSN: 0167-2738

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The result of elec. conductivity measurements, x-ray powder diffraction and  
DTA on Li2SO4-Li3PO4 mixts. are presented and the phase diagram is determined  
A large region of solid solution Li2+xS1-xPxO4 (0 < x ≤ 0.7) with α-Li2SO4  
structure is found between 563 and 1121°. In this region, the elec.  
conductivity decreases slightly according to a "paddle-wheel" mechanism, and  
not to a "percolation" mechanism. At lower temps. a considerable increase of  
the elec. conductivity occurs for the (Li2SO4)0.7-(Li3PO4)0.3 mixture which

corresponds to a solid 2-phase region; this is due to the classical "dispersal" mechanism which occurs in composite ionic conductor although there is not an eutectic mixture in this system. No intermediate phase exists in this system.

IT 129268-35-5, Lithium phosphate sulfate  
 (Li<sub>2.5</sub>(PO<sub>4</sub>)<sub>0.5</sub>(SO<sub>4</sub>)<sub>0.5</sub>) 129268-92-4, Lithium phosphate  
 sulfate (Li<sub>1-2.5</sub>(PO<sub>4</sub>)<sub>0-0.5</sub>(SO<sub>4</sub>)<sub>0.5-1</sub>) 129268-93-5, Lithium  
 phosphate sulfate (Li<sub>2.3</sub>(PO<sub>4</sub>)<sub>0.3</sub>(SO<sub>4</sub>)<sub>0.7</sub>) 129268-94-6,  
 Lithium phosphate sulfate (Li<sub>2.2</sub>(PO<sub>4</sub>)<sub>0.2</sub>(SO<sub>4</sub>)<sub>0.8</sub>)  
 129268-95-7, Lithium phosphate sulfate  
 (Li<sub>2.1</sub>(PO<sub>4</sub>)<sub>0.1</sub>(SO<sub>4</sub>)<sub>0.9</sub>)  
 RL: PRP (Properties)  
 (elec. conductivity of)  
 RN 129268-35-5 HCAPLUS  
 CN Lithium phosphate sulfate (Li<sub>2.5</sub>(PO<sub>4</sub>)<sub>0.5</sub>(SO<sub>4</sub>)<sub>0.5</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4S	0.5	14808-79-8
O4P	0.5	14265-44-2
Li	2.5	7439-93-2

RN 129268-92-4 HCAPLUS  
 CN Lithium phosphate sulfate (Li<sub>1-2.5</sub>(PO<sub>4</sub>)<sub>0-0.5</sub>(SO<sub>4</sub>)<sub>0.5-1</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4S	0.5 - 1	14808-79-8
O4P	0 - 0.5	14265-44-2
Li	1 - 2.5	7439-93-2

RN 129268-93-5 HCAPLUS  
 CN Lithium phosphate sulfate (Li<sub>2.3</sub>(PO<sub>4</sub>)<sub>0.3</sub>(SO<sub>4</sub>)<sub>0.7</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4S	0.7	14808-79-8
O4P	0.3	14265-44-2
Li	2.3	7439-93-2

RN 129268-94-6 HCAPLUS  
 CN Lithium phosphate sulfate (Li<sub>2.2</sub>(PO<sub>4</sub>)<sub>0.2</sub>(SO<sub>4</sub>)<sub>0.8</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4S	0.8	14808-79-8
O4P	0.2	14265-44-2
Li	2.2	7439-93-2

RN 129268-95-7 HCAPLUS  
 CN Lithium phosphate sulfate (Li<sub>2.1</sub>(PO<sub>4</sub>)<sub>0.1</sub>(SO<sub>4</sub>)<sub>0.9</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

O4S		0.9		14808-79-8
O4P		0.1		14265-44-2
Li		2.1		7439-93-2

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 68

IT 129268-35-5, Lithium phosphate sulfate

(Li<sub>2.5</sub>(PO<sub>4</sub>)<sub>0.5</sub>(SO<sub>4</sub>)<sub>0.5</sub>) 129268-92-4, Lithium phosphate

sulfate (Li<sub>1-2.5</sub>(PO<sub>4</sub>)<sub>0-0.5</sub>(SO<sub>4</sub>)<sub>0.5-1</sub>) 129268-93-5, Lithium

phosphate sulfate (Li<sub>2.3</sub>(PO<sub>4</sub>)<sub>0.3</sub>(SO<sub>4</sub>)<sub>0.7</sub>) 129268-94-6,

Lithium phosphate sulfate (Li<sub>2.2</sub>(PO<sub>4</sub>)<sub>0.2</sub>(SO<sub>4</sub>)<sub>0.8</sub>)

129268-95-7, Lithium phosphate sulfate

(Li<sub>2.1</sub>(PO<sub>4</sub>)<sub>0.1</sub>(SO<sub>4</sub>)<sub>0.9</sub>)

RL: PRP (Properties)

(elec. conductivity of)

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